

## **REMARKS**

As a result of the maintenance of the previously imposed restriction requirements, claims 7-26 were considered and rejected, whereas claims 1-6 and 27 remain withdrawn. Accordingly, claims 1-6 and 27 have now been cancelled, without prejudice.

Claims 7-26 are again presented without amendment. New claims 28 and 29, like claim 7, are also directed to a compressive pulp beating refiner with confronting rolls. For the reasons set forth below, applicant believes all claims satisfy the patentability requirements of 35 U.S.C. §102 and 35 U.S.C §103.

Claims 7-9, 11, and 22 were rejected as anticipated under 35 U.S.C. §102(b), based on the disclosure of U.S. Patent 6, 338,773 ('773). The '773 patent discloses a device for dewatering a solid/liquid suspension, particularly a pulp suspension. This is in contrast with the recitation in applicant's independent claim 7, which is directed to a pulp beating refiner. Claim 7 requires a refining zone having two beating surfaces defined by confronting rolls. In the context of pulp and paper technology, "beating" and "refining" are terms of art which are very different from, and cannot be confused with "dewatering". The dictionary at [www.paperonweb.com](http://www.paperonweb.com) defines "beating or refining" as "the mechanical treatment of the fibers in water to increase surface area, flexibility and promote bonding when dried". Applicant's specification refers to conventional refining for roughing up the surface and compressing the fiber material, while pressing the pulp at the same time, with the present invention intended to alleviate or avoid certain associated disadvantages (see paragraphs 4 and 5 on page 2).

According to the embodiment of claim 7, the beating surfaces (i.e., the surfaces that produce the compressive pulp beating) are defined by the confronting rolls, i.e., it is the rolls themselves that produce the refining effect. Other described and claimed embodiments (the subject of withdrawn claims) do not require that the beating surfaces of the refining zone be defined between confronting rolls.

The '773 patent has nothing to do with, and does not teach or suggest, a pulp beating refiner, let alone such a refiner as defined by applicant's claims. Although the '773 device discloses opposed rolls, these are associated with dewatering belts. The

belts, not the rolls, press against the pulp in various ways. For example, pulp is fed in between two belts and then pressed first in the wedge zone then around and between the rolls. In this arrangement, a beating of the pulp (or the web) is not possible as there are only pressing forces on the belts, which lead to minimization of the pores in the web that contain water. There is no beating or refining effect on the fibers themselves, as is required by applicant's claim 7 ("refining zone").

Especially as defined in the dependent claims, with the direct contact of the pulp and the beating surfaces, and with the surfaces moving at different relative speeds or having interengagable surface irregularities such as spikes, fluting or grooves, or with predefined roughness, shear forces are imposed on the pulp, producing the refining effect.

New claims 28 and 29 emphasize the direct contact of both rolls with the pulp to generate compression and shear forces to refine the pulp. The direct contact is supported in Figure 2 and on page 4, third and fourth full paragraphs; page 5, seventh full paragraph; and page 10, second full paragraph. The combination of compression and shear forces is mentioned on page 3, second full paragraph and page 7, eighth full paragraph. The hard surface of the rolls is supported on page 7, full paragraphs 9 to 11.

None of the secondary references cited by the examiner, even if combined with the '773 patent, reasonably point toward applicant's claimed invention. U.S. 5,997,694 ('694) also shows a dewatering press for paper or cardboard, where no shear forces can be applied to the web itself. Furthermore, a combination with '773 would only lead to a machine with improved dewatering effect, but not any refining effect.

U.S. 5,943,951 ('951) shows a press roll with a press cover. The cover may have grooves as is described only generally. However, here also the purpose is a dewatering (drainage) effect.

U.S. 5,695,612 ('612) is also directed to a dewatering unit for a paper web, whereby the web is transported between two belts and no refining effect can be created.

Given that the basic reference cited by the examiner is directed to a different type of equipment and process, for a different purpose, and cannot be used for beating or refining, and that none of the secondary references teaches or suggests apparatus or

method for beating or refining, applicant's claims are neither anticipated nor rendered obvious under 35 U.S.C. §102 and 35 U.S.C. §103.

This paper is filed during a one-month extension of the shortened period for response; the petition fee is enclosed herewith. Inasmuch as seven total and two independent claims have been cancelled, the presentation of two new claims including one independent claim, does not require payment of a fee for extra claims. If such fee is required, the Commissioner is authorized to charge Deposit Account No. 16-2653 the required amount.

Respectfully submitted,  
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